ABSTRACT

Systems and methods are provided for knowledge discovery in spatial data as well as to systems and methods for optimizing recipes used in spatial environments such as may be found in precision agriculture. A spatial data analysis and modeling module is provided which allows users to interactively and flexibly analyze and mine spatial data. The spatial data analysis and modeling module applies spatial data mining algorithms through a number of steps. The data loading and generation module obtains or generates spatial data and allows for basic partitioning. The inspection module provides basic statistical analysis. The preprocessing module smoothes and cleans the data and allows for basic manipulation of the data. The partitioning module provides for more advanced data partitioning. The prediction module applies regression and classification algorithms on the spatial data. The integration module enhances prediction methods by combining and integrating models. The recommendation module provides the user with site-specific recommendations as to how to optimize a recipe for a spatial environment such as a fertilizer recipe for an agricultural field.